

A REVISION OF THE GENUS *RAPANEA* AUBL. (MYRSINACEAE) IN NEW GUINEA

H. SLEUMER

Rijksherbarium, Leiden, The Netherlands

SUMMARY

A taxonomic revision of the genus *Rapanea* Aubl. in New Guinea, and partly in the adjacent areas (mainly the Moluccas and the Solomon Islands), comprising 22 species, 5 of which are new to science. A key to the species, full descriptions of all taxa, and an enumeration of the collections studied are given.

INTRODUCTION

In Mez' monograph of the Myrsinaceae (1902) only 3 species of *Rapanea* are mentioned from New Guinea; one species has been added by K. Schumann in 1905, and many more by Mez himself in 1922 and 1924, and by Kanehira & Hatusima in 1943. In 1978 a survey of a group of small-leaved *Rapaneas* in New Guinea was undertaken by two students at the Rijksherbarium, Jan Knoester and Marijke Wijn. Their results have not been published, but were used by the present author. In 1982 a treatment of all 'alpine' species by P. van Royen appeared in his 'Alpine Flora of New Guinea'. Many of the species proposed by these previous authors are reduced to synonymy in the present paper; the richness of *Rapanea* in New Guinea, however, is still remarkable. *Rapaneas* grow there from the coast to alpine altitudes, and are often locally common, sometimes forming pure stands on mountain crests. Most species have a wide distribution, a fact which has become apparent only through the vast collections of *Rapanea* made in the last four decades. It is the aim of this paper to give an up-to-date revision of the genus in New Guinea. For this purpose also part of the species known from Celebes, the Moluccas, the western Pacific and Australia (mainly Queensland) have been studied, as far as these seem to be related to the New Guinean ones, and as far as the material present in the Rijksherbarium allowed.

The loss of the complete collection of Myrsinaceae at Berlin in 1943 is a heavy handicap for such a revision, as duplicates of Mez' types are scanty in other herbaria. Specimens mentioned in the original descriptions have been received on loan from A, BO, K, LE and WRSL (Herb. Lauterbach only, the Myrsinaceae in the General Herbarium there being lost).

As to the acceptance of *Rapanea* Aubl. as a genus distinct from *Myrsine* L. I follow the arguments expressed by A. C. Smith in J. Arn. Arbor. 54 (1973) 289, which in my opinion sufficiently elucidate the differences between these genera.

The author has had the opportunity to collect *Rapaneas* in the Vogelkop Peninsula (Tamrau Mts, Arfak Mts, Kebar valley), at and around the Cyclops Ra., and on Mt Kaindi (Morobe Dist.). Collections cited are deposited in the Rijksherbarium (L) unless otherwise stated.

EVALUATION OF CHARACTERS

In *Rapanea* the inflorescences are of a uniform fasciculate or umbellate type. The flowers arise from axillary bracteolate buds, or not rarely from the top of axillary short axes (stems) covered by bracteoles; the length and diameter of these strobiliform axes vary considerably from the initial stage to fructification. The flowers themselves are small and show no clear-cut differences as to the length of the pedicels, the form and length of the calyx resp. corolla lobes and their gland-punctuation or -lineation; flowers are usually constantly 4- or 5-merous, but sometimes 4- and 5-merous flowers may occur in the same specimen. As the flowers are often badly developed or preserved (sometimes galled) in herbarium specimens, their detailed description has been omitted in general in this paper. Taxonomically the most important characters are found in the branchlets, the leaves, and the fruit with its stigma.

The young branchlets may bear a layer of sessile or stalked scales of various size and density, which disappears on older parts, or which is so thin that it may escape the attention of a taxonomist, or is practically absent from the beginning. Therefore I have not given this character so much weight as has been done by Van Royen in his 'Alpine Flora of New Guinea'. The shape of the leaves, within the limits indicated in the key, is a main character. The glandular punctuation and/or lineation of the leaves seems to be constant enough in most species, though some glandular rather short or nail-like lines are found on leaves of species which normally do not have these. Only one of the New Guinean species, i.e. *R. papuana*, has the margin crenate in the upper half of the leaves. Differences in texture and nervation are not very helpful to characterise species.

Like leaf shape, the shape of the drupe (globose versus ellipsoid/ovoid) is important, and also the form of its stigma, which is either crown-like and lobed, sometimes short-erect and rather thickish, or filiform to sausage-like and of considerable length. Unfortunately, the stigma is caducous, and certainty about the type of stigma can often be gained only when a number of rather immature drupes is present on the specimen.

In the past numerous species have been described incompletely, i.e. from male, female, or fruiting specimens. In certain cases, where type material has been totally lost, it is no longer possible to recognize a species name as a synonym with certainty, especially when no new collections have been made in the type collection area, or when the original vegetation of a type locality has apparently been destroyed. Also it has not been possible to name those collections of *Rapanea* in New Guinea which are either badly preserved or incompletely collected; they might include several not yet described species.

RAPANEA

Rapanea Aubl., Hist. Pl. Guiane Franç. 1 (1775) 121, t. 46. — *Hunsteinia* Lauterb., Bot. Jahrb. 55 (1918) 265; Hatusima ms, cf. Fl. Males. I, 5 (1955) XCVIII.

KEY TO THE SPECIES

- 1 a. Corolla all over papillose outside. (Leaves generally very coriaceous, large, 15–26 by 5–12 cm.) **1. *R. coriifolia***
- b. Corolla glabrous outside (maybe papillose at edge or at tips of the corolla lobes inside). (Leaves usually smaller.) **2**
- 2 a. Leaves with 3–6 (rarely more) distinct crenulations on either side in the upper part of the lamina **2. *R. papuana***
- b. Leaves entire or practically so (maybe very finely crenulate in the dry state only) **3**
- 3 a. Leaves essentially obovate, or spatulate, or suborbiculate, apex more or less rounded, and often retuse, relatively small in general **4**
- b. Leaves obovately elliptic or oblong, or generally oblong to elliptic, or lanceolate, apex broadly attenuate to acuminate, medium-sized in general, or rarely large **8**
- 4 a. Leaves beneath with glandular points and numerous fanning glandular lines **5**
- b. Leaves beneath with glandular points, either exclusively so, or maybe also with scattered short thick nail-like or linear glands between **6**
- 5 a. Leaves subsessile; intramarginal nerve obscure beneath **3. *R. tempampan***
- b. Leaves petioled; intramarginal nerve distinct beneath **4. *R. dicksonii***
- 6 a. Leaves broadly ovate-subcordate, or ovate-orbicular to suborbicular. Branchlets very densely set with persistent brown-reddish scales **5. *R. velutina***
- b. Leaves more elongately obovate. Branchlets subdensely to laxly set with caducous brown scales or papillae, glabrescent, or glabrous from the beginning **7**
- 7 a. Leaves 5–13 by 2–5 mm **6. *R. minutifolia***
- b. Leaves (6–)7–30(–40) by (3–)4–7(–14, –18) mm **7. *R. cacuminum***
- 8 a. Stigma elongate, filiform or sausage-like **9**
- b. Stigma short, capitate or crown-like (lobed) **18**
- 9 a. Leaves (sub)sessile **10**
- b. Leaves distinctly petiolate **11**
- 10 a. Leaves subcoriaceous, exclusively set with glandular points beneath. Drupe 2.5 (–4?) mm diam. **8. *R. clemensiae***
- b. Leaves coriaceous, stiff, with scattered to dense glandular points and lines beneath. Drupe 5–6(–8) mm diam. **9. *R. involucrata***
- 11 a. Flowers in axillary sessile fascicles, or from very short bracteate axes **12**
- b. Flowers from the top of axillary strobiliiform axes (covered by numerous bracts) at least 1.5 mm long **15**
- 12 a. Leaves subrhombic-elliptic-oblong, apex subacuminate-attenuate, (2.5–)3–7 (–9) by (1–)1.5–3 cm **10. *R. rhombata***

- 12 b. Leaves larger, oblong to lanceolate, apex shortly subacuminate or attenuate-obtuse to rounded, (7–)9–14(–16) by (2–)3–5(–6) cm 13
- 13 a. Drupe ellipsoid 11. *R. augustae*
 b. Drupe globose, or depressedly, rarely slightly ovoidly so 14
- 14 a. Leaves strikingly asymmetrical 12. *R. inaequalis*
 b. Leaves symmetrical or almost so 13. *R. densiflora*
- 15 a. Drupe ellipsoid 16
 b. Drupe globose or ovoidly so 17
- 16 a. Leaves oblong or obovate-oblong, sometimes lanceolate, very apex obtuse 14. *R. rawacensis*
 b. Leaves lanceolate to oblanceolate, apex often slightly retuse 15. *R. gomphostigma*
- 17 a. Reticulation of veins and veinlets finely prominent on both faces of the lamina, the lateral nerves curved-anastomosing into a more or less distinct intramarginal nerve 16. *R. acrosticta*
 b. Reticulation of veins and veinlets obscure, as are the lateral nerves 17. *R. revoluta*
- 18 a. Leaves relatively large and coriaceous 19
 b. Leaves relatively medium-sized and subcoriaceous 20
- 19 a. Drupe globose, 5–6 mm diam. 18. *R. arfakensis*
 b. Drupe ovoid-ellipsoid, 6–7 by 4–5 mm 19. *R. lamii*
- 20 a. Leaves (sub)sessile, the very base biauriculate-subcordate 20. *R. cordata*
 b. Leaves petiolate 21
- 21 a. Leaves lanceolate 21. *R. womersleyi*
 b. Leaves lanceolate-oblong to oblong 22. *R. leucantha*

1. *Rapanea coriifolia* Sleum., *spec. nov.*

Arbor 7–15(–21) m alta, corona densa, trunco erecto 20–35 cm diam., cortice laevi dilute usque saturate griseo-brunnescente. Rami pauci, penduli. Ramuli erecti, teretes, leviter striati, cinereo-corticati, 5–8 mm diam., stigmatibus foliorum delapsorum ovatis 3–5 mm diam. ornatis. Folia iis *R. achradifoliae* similia, obovato-oblonga vel -elliptica, apice breviter subacute attenuata, ipso apice obtusa, basi in petiolum cuneata, generaliter valde, interdum minus coriacea, in vivo supra saturate viridia et opaca, subtus pallidiora, in sicco olivaceo-viridia vel -brunnea, utrinque vel supra tantum nitidula, integra, margine in sicco saepius paullo revoluta, supra dense minuteque tuberculata, subtus subdense glanduloso-punctata, 15–26 cm longa, 5–12 cm lata, costa supra paullo immersa vel plana, subtus semper crasse prominente, apicem laminae versus gradatim evanescente, nervis lateralibus sat irregularibus numerosis (plus minus 20), in nervum intramarginalem debilem conjunctis, utrinque parum elevatis vel haud raro subobscuris, reticulo venarum venularumque visibili sed generaliter parum prominulo; petioli 6–20 mm longi, 3(–5) mm crassi. Inflorescentiae e foliorum delapsorum axillis ortae, fasciculatae, 3–5-florae, bracteolae ovatae, obtusae, ca. 1 mm longae, interdum axem floriferam ca. 1 mm longam praebentes; pedicelli glabri,

2–3 mm longi, 1 mm crassi. Flores 5-meri, albidii, ♀ tantum cogniti. Calycis lobi erecti, ovato-delloidei, laxe glanduloso-punctulati, ciliati, 2 mm longi. Corollae lobi inflexi, valde crassi, ovati, extus papillati, 2 mm longi. Ovarium ovoideum; stigma conicum. Drupa (*Streimann 8709*) globosa, apice breviter attenuato-apiculata, viridis, sed maturitate purpurascens, in vivo 1.2 cm, in sicco 0.8 cm diam.; stigma breviter conicum; pedunculus 2–3 mm longus, 1.5 mm crassus; semen unicum.

Distribution. New Guinea, from Morobe District to Milne Bay District.

NEW GUINEA. Eastern part: Morobe Dist., Finschhafen, Tigedu to Sambiang, E of Mongi R., 800 m, Croft & Katik LAE 68597. Wagau, 1005 m, Sayers NGF 21606. Bulolo, Bulolo-Watut Div., 1520 m, fl. female, Oct. 1982, *Streimann 8613* (L, type; A, BFC, LAE, K, UPNG, all iso, n.v.); Upper Watut R. area, Minnoa creek, 1065 m, fr., Kairo NGF 47689; Nauwata Banda logging area, 1250 m, fr., Havel NGF 9165; Nanti logging area, fr., *Streimann 8709*, topotype. — Central Dist., Sogeri, Forbes s.n. (BM). — Milne Bay Dist., N slopes of Mt Dayman, Maneau Ra., 2250 m, fr., Brass 22456.

Ecology. In montane, also mossy forest, often on *Castanopsis*-dominated ridges, 800–2250 m.

Note. Close to *R. achradifolia* (F.v.M.) Mez from Queensland, which has more slender flowers and a richer inflorescence.

2. *Rapanea papuana* (Hemsley) Mez

R. papuana (Hemsley) Mez, Pflanzenreich 9 (1902) 365; van Royen, Alpine Flora of New Guinea 3 (1982) 1965, f. 602 A–E. — *Myrsine papuana* Hemsley, Kew Bull. (1899) 104. — Type: *A. Giulianetti* s.n., anno 1896/97, Papua New Guinea, Northern/Central Dist. border, Owen Stanley Ra., Mt Scratchley, 3300–4300 m, fr. (K).

R. crenata van Royen, Alpine Flora of New Guinea 3 (1982) 1961, f. 601 A–G. — Type: *W. Vink 16078*, Papua New Guinea, W. Highl. Dist., Kubor Ra., Mt Kinkain, 3590 m, fr. (BISH, n.v.; L, iso).

R. saruwagedica van Royen, Alpine Flora of New Guinea 3 (1982) 1963, f. 601 H–N. — Type: *R.D. Hoogland 9955*, Papua New Guinea, Sarawaket Ra., Bolang, 3505 m, fl. male (L; CANB, iso, n.v.).

Gnarled much branched shrubs or small trees, 2–6(–13) m tall; bark whitish-grayish to brown. Branches straight. Branchlets with short internodes, angular or striate-sulcate, glabrous, a little shining, smooth or very shortly papillose, densely foliated distally. Leaves variable in form and size, broadly or ovately elliptic, or generally narrowly ovate-elliptic, sometimes spatulate, apex broadly obtusely attenuate to rounded, or slightly retuse, base (mostly narrowly) cuneate and decurrent to the petiole, firmly chartaceous to subcoriaceous, the upper edge with 3–6 (rarely more) distinct obtuse crenulations on either side, often somewhat revolute (and seemingly crenulate all along the margin in dry specimens), underside with scattered thickish round, elliptic or oblong oil glands, and not rarely also with fanning nail-like or elongate ones, 8–20(–30, –35) by 3–8(–12) mm, midrib shallowly grooved above, prominent beneath, lateral nerves 3–7 pairs, faintly to distinctly inarching, hardly visible above, but generally raised a little beneath, reticulation of veins obscure or rather distinct; petiole 1.5–2(–3.5) mm. Flowers 4-merous, (1) 2 or 3 per

axillary fascicle; bracteoles ovate, obtuse, 1–1.5 by 1 mm, indistinctly ciliolate, forming no proper inflorescence-stem; pedicel stoutish, glabrous, 1–2 mm. Calyx lobes ovate, very laxly gland-punctate and maybe also shortly -lineate, ciliolate, c. 1.5 mm. Corolla pink, glabrous, lobes ovate-oblong, with a few nail-like glands, more or less densely papillate inside apically, 1.5–2 mm. Drupe globose, sometimes slightly ellipsoidly so, white-yellowish first, purplish to dark blue in final stages, 2.2–2.8 (3.5) mm across, with short glandular lines; stigma short-filiform, erect, 1 mm.

Distribution. New Guinea, in the main range from Mt Carstensz to Milne Bay District, also in the Sarawaket Range.

NEW GUINEA. Western part: Mt Carstensz, Dajakweide, ANU 10851; Wissel 156. Oranje Mts, Mt Wilhelmina (Trikora), Brass & Meijer-Drees 9638, 9791, 9936, 10305. Bernhard Camp, Idenburg R., Brass 12450. – Eastern part: W. Sepik Dist., Star Mts, LAE 59308, Veldkamp 6541, 6597, 6640. – W. Highl. Dist., Kubor Ra., ANU 15562; Pullen 5061, 5083, 5099; Mt Kinkain, Pullen 5124. – E. Highl. Dist., Mt Wilhelm area, ANU 7375, 7388; van Balgooy 203, 272, 842; Borgmann 72; Brass 29988; Hoogland & Pullen 5777; NGF 8848, 15318, 35065, 39536. Mt Kerigomna, LAE 54606. Mt Otto, Brass & Collins 31030. – S. Highl. Dist., Mt Giluwe, LAE 55947; Schodde 1909. Mt Ialibu, LAE 55825. Mt Karoma, LAE 73685. – Morobe Dist., Finisterre Mts, NGF 21434; van Royen 11669. Sarawaket Ra., Hoogland 9829, 9872. Mt Amungwiwa, S of Wau, NGF 17959. – Northern Dist., Kokoda, Mt Kenive, LAE 65083. – Central Dist., Mt Albert Edward, Brass 4281 (BO); LAE 61455; Paymans 664. Mt Strong, NGF 46202. Mt Victoria, LAE 61814. – Milne Bay Dist., Mt Suckling area, LAE 54192.

Ecology. In edge of upper montane, subalpine or alpine forest, also in shrubberies within alpine grassland, (2150–)3100(–3900) m, locally dominant.

Note. Fresh leaves are very aromatic when crushed, contrary to other (sub)alpine species as *R. cacuminum* and *R. velutina* which are but slightly aromatic.

3. *Rapanea tempampan* van Royen

R. tempampan van Royen, Alpine Flora of New Guinea 3 (1982) 1983, f. 607 G–I. – Type: *R. D. Hoogland 9866*, Papua New Guinea, Morobe Dist., Sarawaket Ra., Tempampan, fr., 18 Sept. 1964 (L; CANB, iso, n.v.).

Tree c. 6 m tall, with erect branches. Branchlets densely foliated, terete, striate-sulcate lengthwise, at first densely covered with dark red brown or brown conoid papillae, becoming rough with age by the persistent basal parts of these papillae. Leaves subsessile, narrowly obovate or spatulate, apex obtusely attenuate, often slightly retuse, base cuneate to the very short petiole, very base obtuse from a thick leaf-cushion, coriaceous, rather stiff, shining above, entire, slightly revolute and brown in dry specimens, with numerous glandular points and fanning glandular lines between underneath, 1.5–3.2 by 0.7–1.1 cm, midrib bold beneath only, lateral nerves faint above, obscure beneath as is the intramarginal nerve, no reticulation; petiole 0–1 (–2) mm. Flowers 4-merous, known in bud stage only, solitary from the upper leaf axils; bracteoles ovate-elliptic, obtuse, 1–2 by c. 1 mm, forming no proper inflorescence-stem. Drupe globose, with few elongate oil-glands, pale purple, 4(–5) mm diam., on peduncle c. 2.5 mm; stigma apparently subcapitate.

Distribution. Eastern New Guinea, once collected in the Sarawaket Range.

Ecology. On the upper edge of montane cloud forest at 3415 m.

Note. Related to *R. involucrata*?

4. *Rapanea dicksonii* van Royen

R. dicksonii van Royen, Alpine Flora of New Guinea 3 (1982) 1969, f. 602 F–J. – Type: *T. G. Hartley 13022*, Papua New Guinea, Morobe Dist., Goilala, between Mt Dickson and Kuputivava, 2745 m, fl. male, 12 Feb. 1964 (L; CANB, iso, n.v.).

Shrubs or trees, 2–4(–7) m tall; bark brown or gray. Branches erect. Branchlets terete, red brown, striate-sulcate when dry, glabrous, shining. Leaves obovate to obovate-spathulate, apex broadly attenuate to obtuse, sometimes rounded or a little retuse, base cuneate, dark green above, paler beneath when fresh, brownish-olivaceous when dry, subcoriaceous or thinly so, entire (though the edge sometimes finely crenulate in dry specimens), hardly revolute, set with dense to scattered glandular points and fanning lines all over the undersurface, with a chain of exclusive glandular points along the edge, 2.2–3(–4) by 0.6–1.2(–1.5) cm, midrib grooved above, prominent beneath, lateral nerves 6–8 pairs, archingly joined and forming a distinct almost straight intramarginal nerve, somewhat raised beneath only, reticulation of veins obscure; petiole (1–)2–3(–5) mm. Flowers 4-merous, 2 or 3 from each upper axil, which bears several ovate-acuminate bracts (1.5–2 mm, forming no proper stem); pedicels glabrous, 2.5–4 mm. Calyx green, lobes ovate, 1.2–1.5 mm, ciliate, with a few elongate glands. Corolla white or pinkish, lobes ovate-oblong, acute, glandular-papillate inside on margin and tip, c. 2 by 1 mm. Drupe not known yet.

Distribution. Once found both in the western part of New Guinea (Star Mts) and in the eastern part (Morobe Dist.: Mt Dickson area).

NEW GUINEA. Western part: Star Mts, Mt Antares, Kalkman 4537.

Ecology. In subalpine moss forest or shrubberies, 2745–3380 m.

Note. Four other collections, cited by Van Royen in the original description, belong clearly to *R. papuana*.

5. *Rapanea velutina* Knoester, Wijn & Sleumer, *nom. nov.*

R. nummularia van Royen, Alpine Flora of New Guinea 3 (1982) 1980, f. 607 A–F, non (Hook. f.) Oliv., Rev. Auckl. Inst. Mus. 4 (1952) 112 (based on *Suttonia nummularia* Hook. f., Fl. New Zeal. 1 (1853) 173, t. 43). – Type: *A. N. Millar (& P. van Royen) NGF 14678*, Papua New Guinea, E. Highl. Dist., Mt Wilhelm, Lake Aunde, 3655 m, fr. Sept. 1962 (L; LAE, iso, n.v.).

Shrubs, bushy treelets, or erect trees, sometimes straggling or spreading, 1.5–8 m tall; bark smooth, brown or grayish. Branches steeply ascending. Branchlets densely foliate, terete, very densely covered with persistent dark brown to reddish lobed papillae or scales, which in the older parts go except their papillar base, rendering them

rough to the touch. Leaves broadly ovate-subcordate, or ovate-orbicular, sometimes suborbicular in the same specimen, apex rounded or obtuse, maybe a little retuse, base broadly cuneate to rounded, subcoriaceous, entire or practically so, dark green above, paler beneath when fresh, brown when dry, 3–8(–14) by 3–7(–9) mm, with rather dense to scattered glandular points on both faces, and a few scales along the lower part of the margin and on the petiole, midrib grooved above, prominent below, lateral nerves or veins obscure; petiole 1(–2) mm. Flowers 4-merous, pink to pinkish purplish, (1) 2 or 3 per axillary cluster; bracteoles few, elliptic-ovate, ciliate, 0.9 by 0.3 mm, obtuse, ciliate; pedicels glabrous, 1–2 mm. Calyx lobes ovate-acuminate, gland-ciliate, with scattered glandular dots mainly in the upper half, 1–1.5 mm. Corolla lobes ovate-oblong, papillate at edge, 2.5 by 1.5 mm, with a few small round and nail-like oilglands. Drupe globose, with few round and nail-like oilglands, purple or bluish, or sometimes red, 2–2.5 mm diam.; stigma thick-filiform, 1.2–1.5 mm.

Distribution. In New Guinea, from the Star Mts and Burgers Mts to the Western and Southern Highlands.

NEW GUINEA. Eastern part: W. Sepik Dist., Star Mts, Mt Capella, LAE 59634. – E. Sepik Dist., Burgers Mts, Veldkamp & Vinas 7449. – W. Highl. Dist., Kubor Ra., Pullen 5082; Vink 16014. Mt Hagen, ANU 6362; Robbins 338. Wahgi-Jimmi Div., NGF 5198. – E. Highl. Dist., Mt Kerigomna, LAE 54596. Mt Otto, Brass & Collins 31026. Mt Michael, Brass & Collins 31265; NGF 11491. Mt Wilhelm, E slope, ANU 7274; Borgmann 372; Brass 29890; Hoogland & Pullen 5651; NGF 27739, 35066, 39612. – S. Highl. Dist., Mt Ambua, Vink 17293, 17374. Mt Giluwe, LAE 52247; NGF 40272; Schodde 1779. Mt Ialibu, LAE 55808. Mt Karoma, LAE 73680. Mt Kerewa, LAE 73701.

Ecology. In subalpine shrubberies or moss forest patches, sometimes scattered in alpine grasslands, 2770–3675 m.

6. *Rapanea minutifolia* Knoester, Wijn & Sleumer, *spec. nov.*

Frutex vel arbuscula 1–3 m alta. Ramuli graciles, subteretes, in sicco atro-brunnei, subdense caduceque lepidoto-papillosi. Folia anguste obovata, apice obtusa vel minute emarginata, basi in petiolum elongato-cuneata, subcoriacea, in sicco rubro-brunnea, supra nitidula, glabra, margine (sub)integra paulloque revoluta, subtus dense glanduloso-punctata breviterque -lineata, 5–13 mm longa, 1–1.5(–2.5) mm lata, nervis lateralibus sat obscuris; petioli 1–1.5(–2.5) mm longi. Flores ♀ 1 vel 2 axillares, 4-meri; pedicelli gracillimi, 1–1.5 mm longi, basi bracteis minutis 2 vel 3 instructi, eglandulosi. Calycis lobi triangulares, apice ciliolati, sub fructu reflexi, ca. 1 mm longi. Corollae lobi elliptici, obtusi, laxe glanduloso-punctati, ca. 1.2 mm longi. Drupa globosa, sat laxe glanduloso-punctata vix -lineata, maturitate, purpurascens, ca. 2 mm diam.; stigma breviter capitatum.

Distribution. New Guinea, scattered in the Vogelkop Peninsula, in the Morobe District and in the Milne Bay District.

NEW GUINEA. Western part: Vogelkop Peninsula, Tamrau Mts East, waterdivide above Waumi R., 1850–2000 m, van Royen & Sleumer 7177, 7228. Arfak Mts, Mt Lensemoei near Minjambau, 1850 m, Versteegh BW 12651. Kebar valley, Mt Nettoti, 1940 m, fr. 29 Nov. 1960, Ver-

steegh BW 10368 (L, type); *ibid.*, 2100 m, van Royen & Sleumer 7949. — Eastern part: Morobe Dist., Wau, Mt Kaindi, 2438 m, Katik & Larivita LAE 62072; Mt Amungwiwa, 2500 m, Moi 86. — Milne Bay Dist., scarp of Tantam plateau above Mayu R., Mt Suckling area, 2255 m, Stevens LAE 55640; Mt Donana, Cruttwell 1244.

Ecology. In upper montane *Xanthomyrtus*–*Podocarpus* forest, 1850–2500 m.
Note. A microphyllous form of *R. cacuminum*?

7. *Rapanea cacuminum* Mez

- R. cacuminum* Mez, Bot. Arch. 6 (1924) 232. — Type: *A. Pulle* 1044, New Guinea, W. part, Oranje Mts, top of Mt Wichmann, 3100 m, fl. female, Feb. 1913 (B, lost). No duplicate preserved at BO, K, L, P, or U.
- R. sp.*, Sp. Moore, Trans. Linn. Soc. Bot. 9 (1916) 107, in obs., based on *C.B. Kloss s.n.* anno 1913, New Guinea, W. part, Utakwa R. to Mt Carstensz, camp 12/13, 3140–3320 m (BM).
- R. vaccinioides* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 234, f. 24; van Royen, Alpine Flora of New Guinea 3 (1982) 1962, f. 600. — Types: *R. Kanehira* & *S. Hatusima* 13451, New Guinea, W. part, Vogelkop Peninsula, Arfak Mts, in the dry low spinneys on the summit of the E slope running to Lake Angi Gita, 2100 m, fr. 5 April 1940 (lectotype, FU, n.v.; A, BO, iso); *R. Kanehira* & *S. Hatusima* 14031, *ibid.*, on the plateau between Angi Gita and Angi Gigi Lakes (= Mt Koebré), 2200 m, fr. 9 April 1940 (syntype, FU, n.v.; A, BO, iso).
- R. brassii* van Royen, Alpine Flora of New Guinea 3 (1982) 1979, f. 604 D–J. — Type: *L.J. Brass* 9550, New Guinea, W. part, Oranje Mts, Mt Wilhelmina, Lake Habbema, 3225 m, fl. male, Aug. 1938 (L; A, iso, n.v.).
- R. communis* van Royen, Alpine Flora of New Guinea 3 (1982) 1985, f. 609 & phot. f. 151. — Type: *A.N. Millar* (& *P. van Royen*) NGF 14680, Papua New Guinea, E. Highl. Dist., Mt Wilhelm, Lake Aunde, 3655 m, fl. male & fr., Sept. 1962 (L; BO, iso, ditto LAE, n.v.).

Shrub or medium-sized tree, erect, or sometimes spreading at ground level, very rarely subscandent, (1–)3–6(–10) m tall, densely branched; trunk often crooked; bark dark gray to brown. Branchlets erect, slender, subterete to subangular-striate, at first densely covered with subsessile to stalked caducous scales (which sometimes are found also in the lower part of the leaves and on the petiole), afterwards papillose-verruculose by the somewhat longer persistent bases of these scales, early glabrescent, or sometimes practically glabrous and a little shining from the beginning. Leaves variable in shape and size, obovate-oblong, oblanceolate, or subspathulate, apex obtusely attenuate or rounded, often retuse, base cuneate to the petiole, chartaceous to subcoriaceous, dark green above and weakly aromatic after crushing when fresh, brown and a little shining above, paler and dull beneath when dry, entire, the undersurface generally exclusively set with rather numerous round and rather small oil glands, sometimes partly so with more elliptic or nail-like ones mainly along the midrib, (6–)7–30(–40) by (3–)4–7(–14, –18) mm, midrib impressed or flat above, prominent beneath, lateral nerves (5–)6–12 irregular pairs, straight-ascendent below, arching and joined to a faint intramarginal nerve distally, visibly raised or often obscure above, more or less conspicuous as is the reticulation of veins beneath; petiole (1–)2–3(–5) mm. Flowers pink to purplish, rarely pale, 4- or rarely 5-merous, (1–)2–5 per axillary fascicle; bracteoles rather few, ovate-triangular to elliptic, obtuse, sparsely covered with scales, c. 1 mm, forming no proper inflorescence-stem;

pedicels stoutish, glabrous, 2–3 mm. Calyx lobes narrowly ovate, with scattered scales and oil-glands, 1.2–1.5 mm. Corolla glabrous, though papillate inside at lobes, the latter lanceolate-elliptic with sparse round or linear oil-glands, 1–2 by 1.2–1.8 mm. Drupe globose or slightly depressedly so, pink to purplish or finally blackish, with numerous elliptic oil-glands, 3(–4) by 2–3(–4) mm; stigma thick, erect-conical, 1–1.2 mm; peduncle 2–3 mm.

Distribution. In New Guinea all over the main range, and also in the Sarawaket Range.

NEW GUINEA. Western part: Vogelkop Peninsula, Arfak Mts, Angi Gita Lake area, Kostermans 2090, 2463; Sleumer & Vink BW 14040, 14107. Kebar Valley, Mt Nettoti, Versteegh BW 10395. Mt Antop near Minjambau, Koster BW 13856. Wissel Lakes area, Eyma 5102, 5131; Vink & Schram BW 8602; Versteegh BW 3057. Oranje Mts, Mt Wilhelmia (Trikora) area, Brass 9080, 10849, 11288; Mangen 269, 275, 1088. Idenburg R., Bernhard camp, Brass 12106, 12359. Baliem R. valley, Kostermans & Soengeng 663. Nassau Mts, Docters van Leeuwen 10862. Mt Cyclops, van Royen & Sleumer 5952. – Eastern part: W. Sepik Dist., Ok Tedi headwaters, Hongkong hill, NGF 42850. Star Mts, LAE 59435, 65828; Veldkamp 6307, 6342, 6394, 6459, 6544, 6618; Mt Capella, LAE 59674, 67061, 67063, 67245, 67295, 67430. Mt Scorpio, LAE 65877, 65889, 65962. – E. Sepik Dist., Hindenburg Ra., NGF 32147, 32176, 32179. Victor Emanuel Ra., van Royen 11424. – W. Highl. Dist., Mt Burgers, LAE 59750. Mt Hagen area, LAE 59802; Pullen 122; Veldkamp & Vinas 7627. Kubor Ra. area, Pullen 5028, 5055, 5136, 5174, 5350. Wabag area, ANU 2647, 2781; Robbins 3258, 3389. – E. Highl. Dist., Marafunga, Grubb & Edwards 69; LAE 51058. Mt Kerigomna, LAE 54608. Mt Michael, Brass & Collins 31299. Mt Piora, LAE 68191; NGF 16556; Sands et al. 1628. Mt Wilhelm area, ANU 5227, 7149, 7338, 7374, 7770, 15211, 15305; van Balgooy 227, 283, 507; Brass 30398; Hoogland & Pullen 5778; LAE 74843, 75470; NGF 17420. – S. Highl. Dist., Mt Ambua, Kalkman 4968; NGF 26984, 28296; Vink 17340, 17483. Mt Giluwe, NGF 40218; Schodde 1991. Mt Ialibu, LAE 55787, 55827. Ibiwara, NGF 25127, 28346; Vink 16972. Mt Kerewa, Kalkman 4800. Mt Korama, LAE 73668. Mt Né, Kalkman 4816; Vink 17164. – Delta Dist., Mt Bosavi, Jacobs 8919. – Madang Dist., Finisterre Mts, NGF 21448; van Royen 11623. – Morobe Dist., Mt Amungwiwa, Moi 67; NGF 17947, 17950, 17984, 17995; Rosenberg Oct. 1963; van Royen 11083. Bulldog track, NGF 21083, 21209. Edie Creek, NGF 7586, 19949. Mt Kaindi, Brass 29705; Fallen 365. Cromwell Mts, Hoogland 9389, 9486. Sarawaket Ra., Clemens 6094 (A), 7419, 9462A, 9550, 10060A; Hartley 11205. Summit Camp Salamaua road, NGF 22811. Mt Shungol, Hartley 12506, 12546. – Central Dist., Mt Albert Edward, Brass 4241 (A); Craven 2745; LAE 61464; NGF 45538. Wharton Ra., Murray Pass, Brass 4554; NGF 36841. Mt Dickson area, Hartley 12970, 13026. Mt Victoria area, Carr 13808, 15017, 15038, 15276; Craven 2925, 2976; LAE 61715, 61810, 61812; van Royen 10840, 10915. – Milne Bay Dist., Mt Suckling area, LAE 54190, 54199, 54257; NGF 22377; Veldkamp & Stevens 5639, 5854, 5856.

Ecology. In the understory of montane or generally subalpine forest or shrub-beries, often bordering grassland, (830–)2400–3800(–3950) m, locally dominant. Also found in disturbed forest and with larger leaves then.

8. *Rapanea clemensiae* Sleumer, *spec. nov.*

Frutex 2.5 m altus, vel generaliter arbor 8–12(–15) m alta, trunco 10–15(–60) cm diam., cortice laevi dilute griseo-brunneo. Ramuli sat graciles, rubrobrunnei, glaberrimi, nitiduli, in sicco longitudinaliter sulcato-striati transverseque rugosuli. Folia oblongo-lanceolata, paullo asymmetrica, in superiore tertio latissima, apicem versus

attenuata, ipso apice obtusa, basin versus in petiolum sat crassum 1–2 mm longum (rarius paullo) longiorem) attenuata itaque primo visu sessilia, interdum ima basi subobtusata, subcoriacea, in vivo supra saturate viridia et nitentia, subtus pallidiora, in sicco supra brunnea et opaca, subtus pallidiora, interdum glaucescentia, margine paullo revoluta, integra, subtus dense glanduloso-punctata (nunquam secus costam glanduloso-lineata), (6–)8–10 cm longa, 1.5–2.7 cm lata, costa supra plana, subtus elevata, nervis lateralibus irregularibus 12–15-paribus, paucis intercalaribus brevioribus additis, supra minute, subtus vix prominulis, omnibus in nervum intramarginalem parum conspicuum collectis, rete venularum supra visibili, subtus obscuro. Fasciculi 2–4(–6)-flori axillares, sessiles vel e stipite bracteolato 1–2 mm longo orti; flores 5-meri, albido-virescentes; pedicelli crassiusculi 3–4 mm longi, sub fructu usque ad 6 mm elongati. Calycis lobi lanceolati usque ovato-acuminati, laxe glanduloso-punctati, ca. 1.5 mm longi. Corollae lobi oblongi, dorso dense glanduloso-punctati et -lineati, 3–4 mm longi. Flores ♂♂: Antherae 2 mm longae. Ovarii rudimentum stigmatem elongato crasso ca. 1 mm longo instructum. Flores ♀♀ adhuc ignoti. Drupa (sub) globosa, 2.5 (valde matura –4?) mm diam., dense glanduloso-punctata laxiusque-lineata, demum purpurascens, stigmatem elongato crassiusculo 1–1.5 mm longo.

Distribution. In New Guinea from the Eastern and Western Highlands Districts to the Morobe District (Sarawaket & Rawlinson Range), also in the Milne Bay District (Mt Suckling area).

NEW GUINEA. Eastern part: E. Highl. Dist., Omapura, Hartley 11955. Kainantu-Okapa area, Hartley 12434, 13096. – W. Highl. Dist., Lagaip R. valley, Kepilam, 2440 m, Hoogland & Schodde 7358. – Morobe Dist., E slope of Mt Rawlinson, along Gang creek, 1430 m, Hoogland 9216. Sattelberg area, Sambanga, 1525–1830 m, *M.S. Clemens* 7238, fr. Oct. 1937 (type L; A, B, iso); *ibid.*, Clemens 7753a. – Milne Bay Dist., Mt Suckling area, 1400–1980 m, Stevens & Veldkamp LAE 54138; Stevens LAE 55610; Veldkamp & Stevens 5964.

Ecology. In montane forest, (1400–)1525–1980(–2440) m, becoming shrub-like at higher altitudes, locally common.

9. *Rapanea involucrata* Mez

R. involucrata Mez, Pflanzenreich 9 (1902) 370; van Royen, Alpine Flora of New Guinea 3 (1982) 1968, f. 603. – Type: *A. Giulianetti* s.n. anno 1896, Papua New Guinea, Central/North Dist. border, Owen Stanley Ra., Mt Scratchley, 3300–4300 m, fr. (K).

Tree 5–15(–30) m tall; trunk to 50 cm diam.; bark slightly pustular or transversely fissured, light brown to gray. Branchlets (sub)angular, stoutish, glabrous, early covered with gray cork. Leaves obovate-oblong, or -subspathulate, or oblong, apex shortly obtusely attenuate, base cuneate-attenuate to the petiole, the very base possibly obtuse (but not properly cordate as in *R. cordata*) sessile in general, somewhat revolute in the basal part of dry specimens, fleshy when fresh, coriaceous and stiff when dry, entire, dark green above, paler beneath when fresh, olivaceous to brownish above, pale brown beneath when dry, dull, glabrous, with dense small more or less rounded oil-glands, and few to numerous linear ones mainly close and sub-

parallel to the midrib beneath, (4.5–)5–10(–12) by (1.2–)2.5–4 cm, midrib slightly grooved above, bold beneath, lateral nerves 10–15(–18) pairs rather irregular, with a few shorter intercalary ones between, collected to a rather inconspicuous intramarginal nerve, generally slightly raised on both faces, sometimes less so, as is the dense reticulation of the veins; petiole thick, 0–4(–8) mm. Flowers yellow green with pinkish tinge, or cream, 2–4(–6) in a fascicle from the top of thick (2–3 mm) many-bracteolate stems (2–4 mm), 5-merous; bracteoles broadly orbicular-ovate to more lanceolate, obtuse, 1–1.3 by 1.2–1.7 mm; pedicels robust, glabrous, 2–4 mm. Calyx lobes ovate, ciliate, glabrous, with several elongate oil-glands, 2.5 mm. Corolla tube 0.8 mm, lobes ovate-elliptic, 3.5–4.5 by c. 1.5 mm, densely papillate inside. Drupe depressed-obovoid-globose, or subellipsoid, or subglobose, reddish purple at maturity, 5–6(–8) mm across, with slightly elongate oil glands; stigma slender to filiform, 2–2.5 mm; peduncle 3–5 by 1 mm.

Distribution. New Guinea, in the main range from Mt Wilhelmina (Lake Habbema) to the Milne Bay District.

NEW GUINEA. Western part: Mt Wilhelmina area, Lake Habbema, Brass & Versteegh 10484. – Eastern part: W. Highl. Dist., Wahgi-Jimmy Divide, NGF 5311. – E. Highl. Dist., Goroka, Marafunga Mill, Grubb & Edwards 48; Daulo camp, Pullen 378; Mt Otto area, Brass 31123; Robbins 830. – S. Highl. Dist., Mendi, track to Mt Giluwe, NGF 39720; Kagaba, LAE 56180. Tari, Mt Kerewa, Kalkman 4788. – North. Dist., Mt Kenive, LAE 65143. – Central Dist., Wharton Ra., NGF 30156. Mt Dickson, Hartley 12963. Mt Albert Edward, Brass 4349 (A, BO), LAE 61328. Mt Strong, NGF 46223. – Milne Bay Dist., Guaru Ridge near Mayu 2, LAE 55572.

Ecology. In montane, sometimes conifer (*Podocarpus*–*Papuacedrus*)-dominated rain forest to subalpine shrubberies or grassland border, rarely in mixed secondary forest, (2050–)2350–3965 m, locally common. Wood deep pink.

10. *Rapanea rhombata* van Royen

R. rhombata van Royen, Alpine Flora of New Guinea 3 (1982) 1976, f. 606. – Type: *L. J. Brass* 30757, Papua New Guinea, E. Highl. Dist., Mt Wilhelm, fl. male (L; A, iso, n.v.).

R. wapu van Royen, Alpine Flora of New Guinea 3 (1982) 1971, f. 604 A–C. – Type: *R. D. Hoogland & R. Schodde* 7232, Papua New Guinea, W. Highl. Dist., N slope of Sugarloaf complex along Wapu R., fl. buds (L; CANB, iso, n.v.).

R. leucobranchya van Royen, Alpine Flora of New Guinea 3 (1982) 1975. – Type: *Stevens & Foreman* LAE 55853, Papua New Guinea, S. Highl. Dist., slope of Repeater Station, male fl. buds (K; L, iso).

Shrub or treelet, or understory tree, 1.5–4(–14) m tall; outer bark brown or gray, inner one light orange to whitish. Branchlets terete or subsulcate-striate, glabrous, stoutish, early whitish-grayish-corticate. Leaves subrhombic-elliptic to elliptic-oblong, or oblong, apex subacuminate-attenuate, very apex obtuse, rarely a little re-tuse, base attenuate or cuneate to the petiole, subcoriaceous, rather stiff, glabrous, shiny dark green above, light green beneath when fresh, dull to shining and brown or olivaceous above, dull and paler, i.e. manifestly discolorous beneath in dry specimens, entire, laxly to subdensely glandular-punctate and -lineate (often close to the midrib)

beneath, (2.5–)3–7(–9) by (1–)1.5–3 cm, midrib rather flat above, much prominent beneath, lateral nerves 8–10(–14) pairs, usually rather distinct on both faces and arching to a not much obvious intramarginal nerve, or sometimes indistinct, veins and veinlets densely reticulate-prominent on both faces, though not rarely less visible; petiole 2–5(–9) mm. Flowers in general 4-merous, but sometimes 5-merous even in the same specimen, (1–)2–4 per axillary fascicle, the latter with several basal bracteoles which are ovate, obtuse, ciliolate, 1.2–1.5 mm, forming no proper inflorescence-axes; pedicels glabrous, 1–2 mm at anthesis, 3–5 mm in fruit. Calyx lobes subacute, ciliolate, distally with a few linear oil-glands, 1.5–2 mm. Corolla yellowish or green, glabrous, tubular below for c. 2 mm, free lobes 1.5 mm, reflexed, laxly gland-lineate. Drupe globose, bluish-purple when ripe, more or less densely glandular-punctate and -lineate, 3–3.5(–4) mm diam.; stigma slenderly elongate, style-like, straight-erect, 1.5–2 mm, apex very shortly lobed.

Distribution. Only known from the Eastern part of New Guinea, from the Eastern, Western and Southern Highlands to the Morobe District, and in the Central District.

NEW GUINEA. Eastern part: E. Highl. Dist., Kundiawa, NGF 39530, 39645. Mt Wilhelm area, ANU 7401, 15453; van Balgooy 725; Borgmann 199; Brass 30198; LAE 53222; Pullen 324; Robbins 684; Saunders 794. Mt Kerigomna, Hoogland & Pullen 5539. – W. Highl. Dist., Mt Hagen area, ANU 6354; LAE 59812, 59836; Robbins 361. Wabag, ANU 2807; Robbins 3080. Kubor Ra., Pullen 5053, 5201, 5204, 5295; Vink 16039; Klangen hill, S of Tomba, Veldkamp & Stevens 5488. Sugarloaf complex, Wapu R., Hoogland & Schodde 7169. Yobobos grassland, Upper Lagaip R., Hoogland & Schodde 7503, 7588. – S. Highl. Dist., Mt Giluwe, NGF 32986; Schodde 1713. Mt Né, Kalkman 4862; Vink 17125. Mt Ambua, Kalkman 5005; Vink 17453. Ibiwara, Vink 16990. – Morobe Dist., Sarawaket Ra. area, Clemens 5565, 5846a, 6278; Hartley 11202; Hoogland 9743; NGF 16173. Bakaia, Hartley 12794. – Central Dist., Mt Albert Edward, NGF 45505, 48412A. Wharton Ra., Murray Pass, Brass 4546 (A); NGF 36892, 45557. Owen Stanley Ra. area, Mt Service, van Royen 11033.

Ecology. In upper montane forest, moss forest, subalpine shrubberies, also in open secondary shrubberies or even grassland, (2440–)3155–3665(–3800) m, locally common.

11. *Rapanea augustae* Mez

R. augustae Mez, Bot. Arch. 2 (1922) 212. – Types: *C. Ledermann 12488 & 12506* p.p., Papua New Guinea, W. Sepik Dist., West Ra., 'Felsspitze', fr. (B, syn, lost).

Treelet 6–8 m tall, glabrous. Branchlets slender, covered with dark grayish cork. Leaves lanceolate, apex shortly subacuminate, base gradually and acutely narrowed to the petiole, rigidulous, dull, smooth, set with short linear glands underneath, to 12 by 3 cm; petiole canaliculate, to 5 mm long. Flowers apparently subsessile, not known. Calyx lobes under the drupe 5, subovate, apex rounded, ciliate, gland-punctate and -lineate dorsally, 1.4 mm. Drupes 1 or rarely 2 from very short strobiliform axes, on peduncles hardly 1 mm long, ellipsoid, gland-lineate lengthwise, 5 mm long; stigma thick-sausage-like.

Distribution. New Guinea, only known from the type locality, i.e. the uppermost part of the Sepik R. (formerly Kaiserin Augusta Fluss).

Note. Incompletely known. I have found no specimens which would match the original description, among the hitherto collected *Rapaneas* from the W. Sepik District.

12. *Rapanea inaequalis* Kaneh. & Hatus.

R. inaequalis Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 232. – Type: *R. Kanehira* & *S. Hatusima* 13440, W. New Guinea, Vogelkop Peninsula, Arfak Mts, Angi Lakes Dist., 1800 m, fr. 15 April 1940 (FU, n.v.).

Tree 5–8 m tall, glabrous. Branchlets slender, terete, tips purplish-brownish. Leaves oblong-oblongate, strikingly asymmetrical, apex attenuate or subacuminate, tip obtuse, base gradually narrowed to and decurrent on the petiole, subcoriaceous, brown to reddish brown when dry, paler beneath, a little shiny above, dull beneath, brittle, the edge revolute in dry specimens, with numerous small glandular points (though according to the original description with glandular lines!) beneath, 6–8(–10) by 1.5–2(–3) cm, one half not rarely as double as wide as the other, midrib much depressed above, bold beneath, lateral nerves 10–14 pairs, rather obscure on both faces, as is the reticulation of veins; petiole slender, (3–)6–8 mm. Flowers (2–)3–5 from axillary very short bracteate knobs (no proper stems). Calyx lobes below the drupe 5, triangular-ovate, acute, ciliolate, gland-lineate dorsally, 1 mm. Corolla not known. Drupe globose or slightly ovoidly so, c. 4 by 3.5 mm, densely gland-lineate; stigma thick-filiform, 1–1.5 mm; peduncle rather slender, glabrous, (1–)2–4 mm.

Distribution. West New Guinea, Vogelkop Peninsula, only known from the Arfak Mts in the Angi Lakes area.

NEW GUINEA. Western part: Vogelkop Peninsular, Arfak Mts, Angi Gita Lake, 1800 m, fr. immat., Oct. 1948, Kostermans 2416.

Ecology. In mossy forest at 1800 m.

13. *Rapanea densiflora* (Scheffer) Mez

R. densiflora (Scheffer) Mez, Pflanzenreich 9 (1902) 365. – *Myrsine densiflora* Scheffer, Comm. Myrs. Archip. Ind. (1867) 50; Ann. Jard. Bot. Btzg 1 (1876) 33; F.v. Mueller, Descr. Not. Papuan Pl. 1 (1877) 93; Warb., Bot. Jahrb. 13 (1891) 398. – Type: *A. Zippelius* s.n., May 1828, New Guinea, W. part, South coast, ad fl. Daurga, i.e. Princess Marianne Strait, in paludosis, fl. male (L, sub *Gynoglossum densiflorum* Zipp. ms.).

R. seleoensis Gombocz, Ann. Mus. Hung. Bot. 31 (1938) 1. – Type: *L. Biro* s.n., anno 1896, Papua New Guinea, Aitape Dist., Seleio (Selio) I., Berlinhafen (BP, n.v.); ex descr. matched by NGF 40880 from the same locality.

R. solomonensis C.T. White, J. Arn. Arbor. 31 (1950) 104. – Type: *F. S. Walker* & *C. T. White* BSIP 140, Solomon Islands, New Georgia group, Njapuana I., fr. Sept. 1945 (BRI, n.v.; L, iso).

Shrub or treelet 4–6(–10) m tall; bole not rarely crooked. Branchlets glabrous, laxly lenticellate, early brownish-corticate. Leaves symmetrical or almost so, oblong to lanceolate, or obovately so, apex attenuate, tip obtuse to rounded, sometimes slightly retuse, base attenuate to cuneate towards the petiole, thin-coriaceous, (dark) brown above, paler beneath when dry, glabrous, subdensely dark gland-punctate on both faces, though more visibly so beneath, occasionally with a few glandular lines, finely rugulose above, entire, not properly revolute, (7–)9–14(–16) by (2–)3–5 (–6) cm, midrib flat or subimpressed above, bold beneath, lateral nerves 12–15 pairs rather straight and subparallel with each other, with a number of intercalary less obvious and shorter ones between, slightly or very slightly raised on both faces, no intramarginal nerve present, reticulation of veins and veinlets fine, rather obscure though always visible beneath only; petiole slender, 8–10(–12) mm. Flowers whitish-yellowish, constantly 4-merous, (4–)6–12 per fascicle, the latter arising from top of a bracteolate knob-like stem (1–2, rarely –4 mm); pedicels rather slender, glabrous, 3(–5) mm at anthesis. Calyx lobes ovate-lanceolate, connate at base only, obtuse, ciliolate, with a few glandular lines, 1 mm. Corolla lobes oblong-lanceolate, subdensely gland-lineate, 1.5(–2) mm. Drupe globose, subdensely gland-striate, finally purplish, 3(–4) mm diam.; stigma shortly styliiform, 0.5 mm; peduncle slender, 3–5 mm.

Distribution. Talaud Islands, Moluccas (Obi), Key Islands, in New Guinea from Salawati I., Pigeon I. in the Dampier Strait, to the South coast, on the North coast, on Normanby and Rossel I., in New Ireland, and the Solomon Islands.

TALAUD ISLANDS. Merampi, Lam 3420; Karakelang, G. Piapi, Lam 3258; P. Baronto, Miangas, Lam 3373.

MOLUCCAS. Obi, P. Santari, Nedi (Exp. de Haan) 665.

KEY ISLANDS. Warburg 21380 (A, BM, LE).

SALAWATI. P. Rumbobo, Teijsmann HB 7471. Pigeon I., Dampier Strait, Barclay 4085 (BM, L).

NEW GUINEA. Western part: South coast, Kaimana Dist., Adi I., BW 9926. – North coast, Hollandia, BW 2819, 4180; Kostermans & Soegeng 306, 311; van Royen & Sleumer 6307. – Eastern part: W. Sepik Dist., Vanimo subdist., LAE 52768, 73315. Aitape subdist., Ali I., NGF 40920; Selio O., NGF 40880. – Milne Bay Dist., Normanby I., Brass 25498, 25563, 25566, 25901. Rossel I., LAE 76035 (A). – Admiralty Islands: Manus I., LAE 77490.

NEW IRELAND. Boiku, New Hanover northcoast, NGF 7973.

SOLOMON ISLANDS. Shortland I., BSIP 5764, 13305. – Choiseul, BSIP 4026, 17344, 17517, 18462, 18485, 18807, 18894. – Sta. Ysabel, BSIP 2681, 16519. – Small Maleita, BSIP 16383. – Alite I., BSIP 18059. – Malaulalo I., BSIP 18024. – Small Nggela, BSIP 15482. – Big Nggela, BSIP 15039, 16837. – Malaupaina I., BSIP 17953. – Ulawa I., BSIP 6282. – San Cristobal, BSIP 11041. – Rennell I., BSIP 14950.

Ecology. In coastal, sometimes secondary rain forest or bushy grassland, maybe in brackwater, locally common, from sea-level to 200(–300) m.

14. *Rapanea rawacensis* (A. DC.) Mez

R. rawacensis (A. DC.) Mez, Pflanzenreich 9 (1902) 363. – *Myrsine rawacensis* A. DC., Ann. Soc. Nat. II, 16 (1841) 85; DC., Prod. 8 (1844) 96; Miq., Fl. Ind. Bat. 2 (1859) 1014. – Type: *C. Gaudichaud-Beaupré* s.n. anno 1818/19, W. New Guinea, Rawak I. (off the N coast of Waigeo opposite Kabaré village), fr. immat. (P).

- R. meiziana* Sp. Moore, Trans. Linn. Soc. Bot. 9 (1916) 100. – Type: *C.B. Kloss s.n.* anno 1913, W. New Guinea, S coast, Utakwa R. to Mt Carstensz, camp III, 872 m, fl. male (BM; L, phot.).
- R. rigidula* Mez, Bot. Arch. 2 (1922) 212. – Types: *C. Ledermann 9025*, Papua New Guinea, E. Sepik Dist., Etappenberg on April R., Hunstein Mts (B, lost; K, isolecto); *C. Ledermann 11617, 11862, 12013a*, Papua New Guinea, E. Sepik/W. Highl. Dist. border, Schrader Mts (all lost in B).
- R. boemiensis* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 231. – Type: *R. Kanehira & S. Hatusima 12777*, New Guinea, W. part, Geelvink Bay, Boemi (Bumi), 40 km inward Nabire, 300 m, fl. male, 11 March 1940 (FU, n.v.; A, BO, iso).
- R. boemiensis* var. *littoralis* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 231. – Type: *R. Kanehira & S. Hatusima 13004*, New Guinea, W. part, Waren, 60 miles S of Manokwari, on rocky slope by sea, fr. ellips., 23 March 1940 (FU, n.v.; A, BO, iso).

Shrub, treelet or tree, 2.5–10(–20, –30) m tall; trunk to 30 cm diam.; bark grayish-blackish, maybe flaking off in squares. Branchlets slender, brown when dry, glabrous, terete, older parts set with pustular lenticels and becoming grayish-corticate. Leaves oblong or obovate-, sometimes lanceolate-oblong, apex broadly attenuate, tip obtuse, base gradually and more or less elongately narrowed to the petiole, subcoriaceous though rather stiff, dark green above, light green beneath when fresh, brownish and not rarely shining above, dull beneath when dry, entire, the edge slightly or hardly revolute, (4–)5–8(–10) by (1–)2(–3) cm, very finely and densely rugulose-tuberculate all over the upper surface, densely punctulate by more or less impressed small roundish oil-glands and a few linear oil-streaks on the finely rugulose undersurface, midrib rather flat above, bold beneath, lateral nerves 12–15 (rarely more) pairs, these rather straight and subparallel, with shorter irregular ones between, raised beneath only, reticulation of veins and veinlets faint or none; petiole subulate-canaliculate, transversely rugulose, 5–8 mm. Flowers usually 5-, rarely 4-merous, yellowish or whitish, from top of densely bracteolate axillary cylindric stems (2–3(–4) by c. 1.5 mm), (1–)2–3(–5) together, subsessile or very shortly pedicelled; bracteoles ovate-subacuminate, ciliolate, c. 1 mm. Calyx lobes narrowly ovate, subacuminate, gland-punctate, 1.2 mm. Corolla lobed to almost the base, densely gland-punctate and short-lineate, lobes ovate-oblong, ciliolate, 2 mm. Drupe ellipsoid, sometimes slightly ovoidly so, purple blue, or finally blackish, subdensely gland-punctate and -lineate, 3–4 by 2–3 mm; stigma slenderly sausage-like, early falling off, 1–1.5 mm; peduncle hardly 1 mm.

Distribution. Central Celebes, Moluccas (Buru, Ceram, Morotai, Obi), in New Guinea mainly scattered along the north and south coast, and on the adjacent islands, on New Britain and New Ireland.

CELEBES. Central part: Mamasa, Lombunan, Neth. Ind. For. Serv. bb 20868. Masamba, Dividondek, Neth. Ind. For. Serv. bb 24165. Lakes Mantano-Towuti area, van Balgooy 3657; Kjellberg 3975 (BO); Meijer 11089, 11128.

MOLUCCAS. Buru, van Balgooy 5082; Neth. Ind. For. Serv. bb 25165. – Obi, Isikodolong, de Vogel 4279. – Ceram, W. part, Teijsmann & de Vriese anno 1865/60; Kairatu, Kuswata & Soepadmo 210. – Morotai, Mt Pare, Kostermans 1287; Mt Permatang, Kostermans 960.

NEW GUINEA. Western part: P. Gebeh, Teijsmann HB 7470. Waigeo, Rauki I., Bay of Kabaré, van Royen 5353, 5397. Vogelkop Peninsula, Sorong, van Royen 3504. Arfak Mts, Angi Gita Lake, bivouac Noordpool, 1860 m, Sleumer & Vink BW 14057. Dsjon R. valley, Son, van Royen

& Sleumer 7831. Kebar valley, Koster BW 8049; van Royen & Sleumer 7336; Schram BW 7971. Kaimana, Fak-fak, Stefels BW 3140. Geelvink Bay, Meos Num I., Koster BW 15538. Wandammen Bay, Job I., Schram BW 14970. Wandammen Peninsula, Koster BW 13763. Mamberamo R., Albatros bivouac, Docters van Leeuwen 9524, 11338. Hollandia, Kalkman BW 3751. Cape Tanamerah, van Royen & Sleumer 6523. Cyclops Ra., van Royen 3700; van Royen & Sleumer 5975, 6009, 6155, 6169, 6236. Okwalimkan R. headwaters, NGF 33175. — Eastern part: West. Div., Wassi Kussa R., Tarara, Brass 8743. — Morobe Dist., Markham R., NGF 10337, 13681, 13683. Upper Busu R., NGF 44603. — Milne Bay Dist., Normanby I., LAE 71215. Louisiade Arch., Rossel I., Brass 28246, 28478. Tagula (Sudest I.), Brass 27962.

NEW BRITAIN. Waria, Benim village, NGF 27412.

NEW IRELAND. Schleinitz Ra., LAE 65626. Namanee I., NGF 40489.

Ecology. In lowland rain forest, often close to the sea, also in bushwood and even in open savannah woodland, or in lower montane forest, not rarely on ultrabasic (nickel-bearing) soil, from sealevel to 200(–700, rarely –1800) m, locally common.

15. *Rapanea gomphostigma* Mez

R. gomphostigma Mez, Bot. Arch. 6 (1924) 232; Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 234, f. 25. — Type: *K. Gjellerup* 1201, W. New Guinea, Vogelkop Peninsula, Arfak Mts, 2300 m, fl. female (B, lost). No duplicates in BO, K, L, P, and U.

Shrub, 2–3 m tall, densely branched. Branchlets short, densely foliated, glabrous, striate, older parts dark and finely rugulose in the dry state. Leaves lanceolate to oblanceolate, apex rounded-obtuse, often slightly retuse, narrowly cuneate towards the base, glabrous, with numerous rather distinct glandular points beneath, entire, the edge hardly revolute, subcoriaceous, stiff, a little shining above, dull beneath, brownish above, paler beneath when dry, 3–4.5 by 1–1.3 cm, midrib slightly prominent on both faces, lateral nerves 6–8 rather irregular pairs, a little raised as is the lax reticulation of veins on both faces; petiole slender, 4–5 mm. Flowers 5-merous, few to several from the apex of short (c. 2 mm) cylindric axillary bracteolate stems; bracteoles ovate, obtuse, hardly 1 mm; pedicels to 3 mm. Calyx lobes ovate, minutely crenulate, laxly or not set with oil glands. Corolla lobes subelliptic, acute, laxly or not gland-punctate and -lineate. Ovary ellipsoid; stigma sausage-like. Drupe ellipsoid?

Distribution. West New Guinea, Vogelkop Peninsula, only known from the Arfak Mts around the Angi Lakes.

NEW GUINEA. Western part: Vogelkop Peninsula, Arfak Mts, Mt Koebré between Angi Lakes, Kanehira & Hatusima 14083 (FU, cited by Kanehira & Hatusima, n.v.); Mt Sensenemes on Angi Gigi Lake, 2400 m, st., Sleumer & Vink BW 14196.

Ecology. In *Tristania-Dacrydium* scrub, 2300–2500 m, locally common.

Note. Apparently close to *R. rawacensis*.

16. *Rapanea acrosticta* Mez

R. acrosticta Mez, Bot. Arch. 2 (1922) 259. — Types: *C. Ledermann* 8510, Papua New Guinea, E. Sepik Dist., Hunstein Mts, male fl. buds (B, lost; K, lecto); *C. Ledermann* 8511, *ibid.*, fr.

- (B, lost; K, syn); *C. Ledermann* 10953, *ibid.*, top of Mt Hunstein (B, lost); *C. Ledermann* 12506 p.p., Papua New Guinea, W. Sepik Dist., West Ra., 'Fellspitze' (B, lost).
- R. laccata* Mez, Bot. Arch. 2 (1922) 259. – Syntypes: *Schlechter* 18003, Papua New Guinea, Madang Dist., Ibo Mts (B, lost); *C. Ledermann* 11120 & 11301, Papua New Guinea, E. Sepik Dist., top of Mt Hunstein (B, lost).
- R. angiensis* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 230, f. 19. – Type: *R. Kanehira* & *S. Hatusima* 13459, W. New Guinea, Vogelkop Peninsula, Arfak Mts, Mt Koebré (the elevation between the Angi Lakes), 2300 m, fr. 5 April 1940 (FU, n.v.; A, iso).
- R. koebrensis* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 232, f. 22. – Type: *R. Kanehira* & *S. Hatusima* 13710, W. New Guinea, Vogelkop Peninsula, Arfak Mts, Mt Koebré, 2200 m, fr. 6 April 1940 (FU, n.v.; A, BO, iso).
- R. sayersii* van Royen, Alpine Flora of New Guinea 3 (1982) 1973, f. 605. – Type: *C. D. Sayers* NGF 21206, Papua New Guinea, Morobe Dist., Bulldog track, Edie creek, 3050 m, fl. male (L; A, BO, BRI, CANB, K, SING, SYD, UH, iso, all n.v.).

Usually tree 10–20(–33) m tall with strong branches, rarely erect much branched shrub, or even epiphytic, or reported to be a climber with big crown; bark gray or red brown with corky lenticels, often longitudinally fissured, peeling in large thick pieces. Branchlets red brown and slightly striate-sulcate, tips glabrous, often laccate there, older parts early brownish-corticate. Leaves oblong to oblong-lanceolate, or oblong-elliptic, sometimes obovately so, apex subacuminate, tip obtuse, base attenuate to the petiole, subcoriaceous to coriaceous, often rather stiff, dark green above, paler beneath when fresh, brown-olivaceous or brownish-red and shining (even laccate) or opaque above, paler and dull beneath when dry, flush red, entire, 5–7(–10) by 1.5–2.5(–3, –4) cm, with scattered to numerous glandular points all over both faces, and no or few, rarely more numerous glandular lines, midrib bold on both faces, though more so beneath, lateral nerves 10–14 pairs with a number of shorter ones between, all subparallel or somewhat irregular, usually joined to an intramarginal nerve, a little raised on both faces, reticulation of veins and veinlets dense, finely prominent on both faces; petiole (3–)6–10 mm. Flowers 4-merous, cream, 4–10(–12) from top of cylindrical densely short-bracteolate axillary stems (2–4 by 1.5 mm); pedicels rather slender, glabrous, 2–4(–5) mm at anthesis, to 6 mm in fruit. Calyx lobes broadly subacuminately ovate to suborbicular, epunctate, ciliolate, c. 1 mm. Petals connate at base to a very short tube, elliptic, densely papillate, laxly or not gland-punctate, 1.5 mm. Ovary globose; stigma slender. Drupe globose, sometimes a little depressedly so, pinkish, turning mauve-purple, densely dark gland-punctate and shortly-lineate, 2–2.5(–3) mm diam.; stigma slenderly style- or sausage-like, 1–1.5 mm.

Distribution. Moluccas (W. Ceram), in New Guinea from the Vogelkop Peninsula to the Milne Bay District, also on Goodenough I. and New Britain.

MOLUCCAS. Ceram, W. part, Sosokutai, 1130 m, Eyma 2551, 2553.

NEW GUINEA. Western part: Vogelkop Peninsula, Tamrau Mts East, waterdivide above Wau-mi R., van Royen & Sleumer 7199, 7226. Arfak Mts, Angi Gita Lake, 2000 m, Kostermans 2228. Wandammen Peninsula, BW 13332; Mayr 363 (BO). Mt Wilhelm (Trihora), Mangen 267; Lake Habbema, Brass 10258, 10932, 10987. Bernhard Camp, Idenburg R., Brass 12187, 12360, 12451, 12743. – Eastern part: West. Dist., Kiunga, NGF 46812. – W. Sepik Dist., Telefomin, LAE 59411; NGF 20690. E. Sepik Dist., Prince Alexander Ra., Pullen 1484, 1487. Hunstein Mts, top

of Sumset (Mt Hunstein), Hoogland & Craven 10866, 10965. — Madang Dist., Kani Mts, Schlechter 17670. Karkar I., NGF 33991, 36713. — W. Highl. Dist., Kubor Ra., Pullen 5346. — E. Highl. Dist., Mt Otto, Brass 30947. Asaro-Mairi Div., Hoogland & Pullen 5470. — S. Highl. Dist., Mt Ambua, NGF 28214, 28282, 28289. Mt Né, Kalkman 4913. Mt Kerewa, NGF 25198. Kaguba, NGF 32975. — Morobe Dist., Clemens 9479 (A). Ogeramnang, Clemens 4516 (A). Sambanga, Clemens 7701 (A). Yunzaing, Clemens 2372 (A), 4189 (A). Matap, Clemens 11129 (A). Wau-Salamaua road, NGF 8742, 22805. Edie creek area, Hartley 11789. Mt Kaindi area, Brass 29129, 29671; NGF 11040, 21236, 32887, 35694, 37779, 40522, 47512; Vinas 163. Peira near Garaina, NGF 43587. Wagau, NGF 21625. Mt Shungol, Hartley 12556. — Central Dist., Sogeri, Schodde 3067. Boridi, Carr 13302, 13374, 13506, 13550, 13574, 14594, 14595, 14596, 14601, 14759. Koitaki, Carr 12857. Lala River, Carr 13905. Mt Victoria, The Gap area, Carr 13764, 13788, 15125, 15207. Efogi, Kanis 1378. — Milne Bay Dist., Mt Suckling area, LAE 54174, 54252. Agaun, Mt Duau, LAE 58124. Agaun-Bonenau, Pullen 7912. Goodenough I., Brass 24737. — No locality given: Manner & Street 431.

NEW BRITAIN. Western part: Hoskins, LAE 58477. — Eastern part: Lackit, NGF 38014. Pomio, LAE 58783.

Ecology. From lower montane to subalpine forest, either a substage tree, or a shrub on exposed summits, (485–)1525–3050 m, locally common.

17. *Rapanea revoluta* Kaneh. & Hatus.

R. revoluta Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 233, f. 23. — Type: *R. Kanehira* & *S. Hatusima* 14068, W. New Guinea, Vogelkop Peninsula, Arfak Mts, Mt Koebré (between Angi Lakes), 2300–2400 m, fr. 9 April 1940 (FU, n.v.; A, BO, iso).

Shrub, 0.4–2 m tall, densely branched, glabrous. Branchlets terete, robust, brownish, densely foliated, 3–4 mm diam. Leaves erect, narrowly obovate to elliptic-oblancoelate, or narrowly elliptic, apex rounded, often slightly retuse, base attenuate to and slightly decurrent on the petiole, coriaceous, stiff, the edge a little revolute, reddish-brownish beneath in the dry state, rugulose and somewhat shining above, dull beneath, usually exclusively densely gland-punctulate beneath, though a few glandular lines may occur in the lower half of the lamina, 3–4 by 1–1.5(–2) cm, midrib paler than the rest of the lamina and prominent on both faces, lateral nerves and veins obscure; petiole robust, c. 2 by 1 mm. Flowers not known. Drupes solitary or mostly in twos from top of 1–1.5 mm long multibracteolate axillary stems, globose, densely gland-punctate and short-lineate, 3 mm across in submature state, purplish when ripe, at base with 4 narrowly triangular calyx lobes; stigma thick-filiform, c. 1 mm; peduncle stoutish, 1–2(–4) mm.

Distribution. West New Guinea, Vogelkop Peninsula, only known from the Angi Lakes area in the Arfak Mts.

NEW GUINEA. Western part: Vogelkop Peninsula, Arfak Mts, on Mt Koebré (or Kobreimot, i.e. between Angi Gita and Angi Gigi Lakes) above Testega, 2300 m, fr. 14 Jan. 1962, Sleumer & Vink BW 14122; summit plateau of Mt Gwamongga on Angi Gigi Lake, 2570 m, galled, 21 Jan. 1962, Sleumer & Vink 4374.

Ecology. In fire-induced open heath vegetation of shrubs with isolated trees, 2300–2570 m, locally common.

18. *Rapanea arfakensis* Kaneh. & Hatus.

R. arfakensis Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 230, f. 20. – Type: *R. Kanehira* & *S. Hatusima* 13521, W. New Guinea, Vogelkop Peninsula, Arfak Mts, E slope of Lake Angi Gita, 2000 m, fr. 5 April 1940 (FU, n.v.; A, BO, iso).

Glabrous shrub or treelet, 1.5–4 m tall. Branchlets terete, robust, 3–4 mm diam., older parts covered with grayish cork. Leaves obovate-elliptic, or more rarely narrowly obovate, apex broadly attenuate, tip obtuse, base cuneate, coriaceous, stiff, reddish-brownish and rather dull in dry specimens, the edge sometimes a little revolute, exclusively subdensely to laxly glandular-punctate beneath, 9–12 by 3.5–5 cm, midrib flat above, bold beneath though gradually less so towards the apex of the lamina, lateral nerves c. 15 pairs a little or hardly prominent on both faces, intramarginal nerve none, reticulation faint; petiole robust, rugulose, 1–1.3 by 0.3 cm. Male flowers (Kostermans 2520) 1–3 per axillary fascicle, rising from a knob-like tubercle (1–2 by 1.5–2 mm) which bears numerous ovate 1 mm long bracteoles which apparently go early; pedicels stout, wrinkled longitudinally in dry specimens, 4 by almost 1 mm. Calyx lobes 5, triangular-ovate, subacute, rugulose dorsally, ciliolate, c. 2 mm. Corolla yellow-green, lobes oblong, papillose at edge, glabrous dorsally, c. 3 mm. Female flowers not known. Drupe globose, gland-punctate, 5–6 mm across, on stout glabrous peduncle 4–5(–6) by 1 mm; stigma said to be divided to irregular lobes.

Distribution. West New Guinea, Vogelkop Peninsula, apparently endemic in the Arfak Mts around the Angi Lakes.

NEW GUINEA. Western part: Vogelkop Peninsula, Arfak Mts, Angi Gita Lake, summit of mountain, 2200 m, fl. male, Oct. 1948, Kostermans 2520 (BO).

Ecology. In summit forest, 2000–2200 m, probably rare.

19. *Rapanea lamii* Sleumer, *spec. nov.*

Arbor 8–15(–30) m alta, trunco 6–12(–40) cm diam., cortice dilute brunneo. Ramuli teretes, 5–7 mm crassi, cortice laevi griseo obtecti. Folia oblonga vel elliptico-lanceolata, apice breviter acuminata, ipso apice (sub)acuta, basi plus minus longe in petiolum manifeste supra canaliculatum attenuata, saepius quasi sessilia, coriacea, supra in sicco saturate brunnea vel atrescentia, subtus pallidiora, laxe usque subdense glanduloso-punctata (nunquam -lineata), saepius utrinque minutissime denseque tuberculata vel corrugata, integra, plana, 12–20 cm longa, 3.5–5(–6) cm lata, costa inferne supra immersa, subtus valde prominente, nervis lateralibus ca. 20-paribus rectis in nervum intramarginalem sat obscurum curvato-conjunctis, utrinque elevatulis, vel subobscuris, rete venarum sat obscuro vel nullo; petioli (1–)1.5–2 cm longi, 2 mm crassi. Flores non visi. Fructus 2 vel 3 (raro 4) fasciculati, ex apice axis lignosi multibracteolati (1–)2–4(–6) mm longi et ca. 2 mm crassi orti; bracteolae ovatae, obtusae, ciliatae, 1.5 mm longae; pedunculi graciles, glabri, 2–3 mm longi. Calycis lobi 4 vel 5 anguste deltoidei, dorso laxe glanduloso-punctati, 1.5 mm longi, sub fructu reflexi. Drupa subovoideo-ellipsoidea, breviter apiculata, lineis glandulosis

dense ornata, in vivo sordide albida, in sicco dilute brunnea, 6–7 mm longa, 4–5 mm diam.; stigma conicum, breviter 4- vel 5-lobulatum.

Distribution. West New Guinea, mainly along the north coast from Waigeo to Tanamerah Bay, once found in the interior in the Vogelkop Peninsula (Kebbar valley).

NEW GUINEA. Western part: Waigeo, Rauki I. in Kabare Bay, 70 m, fr., van Royen 5384. Vogelkop Peninsula, Manokwari, Tafelberg, 135 m, fr., Kalkman BW 3694. Oransbari, 8 m, Brouwer BW 2504. Kebbar valley, Bamesan hill NE Andjai airstrip, 560 m, van Royen 4986. Wandammen Bay, Job I., Schram BW 14990. N of Depapre, Tanamerah Bay, 120 m, fr. submat., 15 Oct. 1954, *H. J. Lam 7815* (type, L).

Ecology. In primary and secondary rain forest, at low elevations (to 560 m).

20. *Rapanea cordata* (Scheffer) Mez

R. cordata (Scheffer) Mez, Pflanzenreich 9 (1902) 367. — *Myrsine cordata* Scheffer, Nat. Tijds. Ned. Ind. 32 (1873) 422. — Type: *J. E. Teijsmann HB 7472*, W. New Guinea, Gebeh I., fl. male, Aug. 1871 (BO; BM, K, L, iso).

Medium-sized tree to 18 m tall, trunk straight to 0.5 m diam.; bark gray, slightly warty by lenticels. Branchlets slender, dark brown in the dry state, terete, glabrous, smooth. Leaves sessile or practically so, oblong-lanceolate, partly in the same specimen slightly asymmetric, apex short-acuminate, tip obtuse or faintly retuse, gradually and elongately narrowed to the very short petiole (hardly 1 mm), very base subcaudate-biauriculate, rather coriaceous, stiff, brittle, dark or reddish brown and a little shining above when dry, paler and dull beneath, the whole undersurface minutely tuberculate, with scattered round oil glands mainly along the edge and few to rather numerous linear and impressed ones scattered over the undersurface, entire, revolute mainly in the lower half of the lamina, (6–)8–12 by 1–2 (–2.5) cm, midrib flat above, prominent beneath, lateral nerves numerous pairs, subparallel though hardly visible above, quite obscure beneath in dry specimens, reticulation none. Flowers 4-merous, male only known, pale, yellow, (2–)3(–5) together in a fascicle from top of axillary short (1–3 mm) bracteolate stems; bracteoles numerous, imbricate, ovate-obtuse, ciliate, c. 7–1 mm; pedicels rather slender, glabrous, 1.5–2 mm. Calyx lobes ovate, obtuse, ciliolate, 0.6 mm. Corolla lobed to almost the base, lobes subovate-oblong, fleshy, minutely glandular-punctulate dorsally, 1.5 mm. Drupe (de Vogel 3201) globose, bluish-green, with dense linear oilglands, 3 mm across; stigma small, point-like; peduncle 2 mm.

Distribution. Moluccas (Halmahera), and in the extreme W of New Guinea once found on Gebeh I.

MOLUCCAS. Halmahera, Weda, Nucifera, fl. male, 26 Sept. 1950, de Haan 1760; E. Kor, beyond G. Panjang, fr., 28 Sept. 1974, de Vogel 3201.

Ecology. In primary forest, on weathered rock of serpentine or deep clayey soil, to c. 100 m, locally common.

Note. On Halmahera the finely grained, pale, and medium-heavy wood is much in demand for cabinet work.

21. *Rapanea womersleyi* Sleumer, *spec. nov.*

Frutex vel arbuscula fruticosa, 1.5–4.5 m alta, trunco debili, cortice brunneo. Rami saepius horizontales, elongati. Ramuli graciles, teretes, in sicco atrescentes, in partibus junioribus laxè minute glanduloso-squamulosi. Folia laxè disposita, lanceolata, certè pro parte distinctè inaequilateralia, apicem versus acuminata interdum subfalcata, subacuta, basin versus gradatim in petiolum attenuata, tenuiter subcoriacea vel firme chartacea, in vivo dilute viridia, subtus glaucescentia, in sicco brunnescentia et opaca, subtus pallidiora, subtus subdense lepidibus fuscis minutis laxiusque glandulis oleiferis crassis subellipticis in sicco nigrescentibus induta, integra, (3.5–)5–7 cm longa, (0.5–)0.7–1.3(–1.5) cm lata, costa supra plana vel leviter immersa, subtus bene prominente, nervis lateralibus sat irregularibus utroque latere numerosis supra sat obscuris, subtus in nervum intramarginalè parum conspicuum collectis et cum venis rete densum prominulum formantibus; petioli graciles 2–5 mm longi. Fasciculi axillares 2- vel 3-flori. Flores sat parvi, sessiles, albido-cremei, 4-meri, ♀ tantum cognitè; bracteolae paucae minutae. Calycis lobi ovato-acuminati, glanduloso-punctati, 1.2 mm longi. Corollae lobi oblongi, obtusi, reflexi, 1.5 mm longi. Ovarium ovoideo-conicum, stigmatè brevi conico-sublobulato. Drupa subsessilis, globosa, glanduloso-punctata et -lineata, maturitate purpurascens vel atrescens, 2.5 mm diam.; stigma breviter lobulatum.

Distribution. In New Guinea known from the Baliem R. valley and the Star Mts, also rather common in the Morobe District.

NEW GUINEA. Western part: Baliem R. valley, above Wellesey, 2000–2500 m, Kostermans & Soegeng 714. – Eastern part: W. Sepik Dist., Star Mts, Folangomon, 2400 m, Veldkamp 6830. Silinmogu, 2700 m, Vinas & Wiakabu LAE 59434. – Morobe Dist., Aseki patrol area, Wengomanga, 2180 m, Craven & Schodde 1292. Aseki-Spreader divide, 1920–2100 m, Streimann & Kairo NGF 42413; Stevens LAE 54771; Wau, Mt Amungwiwa, 760 m, Moi 84. Mt Kaindi, 800 m to summit at c. 2250 m, Brass 29585; Conn & Campbell 339; Conn & Kairo 136; Coode et al. NGF 32857; Fallen et al. 505; *J. S. Womersley & H. Sleumer NGF 13926*, fr., Aug. 1961 (L, type; LAE, iso, n.v.).

Ecology. In primary and secondary montane forest, also moss forest, 760–2200 (–2700) m.

22. *Rapanea leucantha* K. Schum.

R. leucantha K. Schum. in K. Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee, Nachtr. (1905) 345. – Type: *E. Nymann* 715, Papua New Guinea, Morobe Dist., Sattelberg, 850 m, fl. male, July 1899 (B, lost, fragm. WRS�-Lauterbach; S, iso, n.v.).

Hunsteinia papuana Lauterb., Bot. Jahrb. 55 (1918) 265. – Type: *C. Ledermann* 11494, Papua New Guinea, E. Sepik Dist., Hunsteinspitze, 1300 m, fl. male, March 1913 (B, lost, fragm. WRS�-Lauterbach, xerox CANB & L).

R. guilhelmina Mez, Bot. Arch. 2 (1922) 260, ex descr. – Syn types: *C. Ledermann* 10972, Papua New Guinea, E. Sepik Dist., Hunsteinspitze (B, lost); *ibid.*, *C. Ledermann* 11266 (B, lost). *C. Ledermann* 11683, Papua New Guinea, E. Sepik/W. Highl. Dist. border, Schrader Ra. (B, lost). *C. Ledermann* 12717, Papua New Guinea, W. Sepik Dist., West Ra., 'Felsspitze' (B, lost).

- R. membranifolia* Mez, Bot. Arch. 2 (1922) 260. — Type: *R. Schlechter* 17993, Papua New Guinea, Madang Dist., Finisterre Mts, 1000 m, fl. male, 15 July 1908 (B, lost; P, iso).
- R. rhynchophylla* Mez, Bot. Arch. 2 (1922) 260, ex descr. — Syn types: *C. Ledermann* 11838, 11844, 11590, 12104, Papua New Guinea, E. Sepik/W. Highl. Dist. border, Schrader Mts (B, all lost).
- R. schlechteri* Mez, Bot. Arch. 2 (1922) 211. — Types: *R. Schlechter* 19403, Papua New Guinea, Morobe Dist., Lower Waria R. area, Pema, 300 m, fl. 11 May 1909 (B, lecto, lost; P, lecto iso); *R. Schlechter* 19483, *ibid.*, Maboro, 1000 m, fl. 18 May 1909 (B, syn, lost; P, iso syn).
- R. acuminatifolia* Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 229, f. 18. — Types: *R. Kanehira* & *S. Hatusima* 13805, W. New Guinea, Vogelkop Peninsula, Arfak Mts, Iray on Angi Gigi Lake, 1900 m, fl. male (FU, holo, n.v.; A, iso); *ibid.*, *R. Kanehira* & *S. Hatusima* 13700, fr. (FU, para, n.v.).
- R. borgmannii* van Royen, Alpine Flora of New Guinea 3 (1982) 1984, f. 608. — Type: *E. Borgman* 174, Papua New Guinea, E. Highl. Dist., Komanemambuno (= Pengagl creek, Mt Wilhelm area), 3000 m, fl. & fr. (L).

Shrub or bushy treelet, or slender tree, 4–8(–15) m tall; bark gray to red brown, fairly smooth. Branchlets slender, subterete, covered with scattered sessile scales, or usually glabrous. Leaves variable in size and texture, lanceolate-oblong to oblong, or elliptic-oblong, sometimes subobovate-oblong or narrowly elliptic, apex gradually attenuate or subacuminate, sometimes caudately so, tip acute or subobtuse, base attenuate to cuneate, dark brown and a little shining above, paler beneath when dry, finely chartaceous to thinly subcoriaceous, rarely more firmly so, flush reddish brown, entire, laxly to subdensely gland-punctate on both faces (the glands often somewhat prominent in dry specimens), in general no glandular lines present (though they may occur occasionally), (6–)9–13(–17) by (2–)3.5–5(–6.5) cm, midrib flat or a little impressed above, bold beneath, lateral nerves (7–)10–15 pairs, with additional shorter ones between, all subparallel, spreading, slightly to more distinctly curved-anastomosing, raised on both faces, intramarginal nerve usually obscure, veins and veinlets laxly to subdensely and finely, sometimes more obviously reticulate-prominent on both faces; petiole (2–)4–6(–9) by 1.5–2.5 mm. Flowers white or cream, usually 4-, sometimes 5-merous, (4–)6–10(–12) per axillary fascicle on often already defoliate branchlets; basal bracts small, forming small axillary nodes, but no proper stem; pedicels slender, glabrous, 4–6 mm. Calyx lobes ovate-acuminate, obtuse, usually hardly any glands visible, 1.5 mm. Corolla lobes oblong, c. 2 mm, set with short glandular lines. Ovary ovoid-subglobose; stigma capituliform, 4(–5)-lobulate. Drupe depressedly globose, white or cream initially, becoming pink to purplish towards maturity, laxly gland-lineate, 3.5–4(–5, –6) mm diam.; stigma crown-like; peduncle 4(–9) mm.

Distribution. Moluccas (Ceram, Buru), in New Guinea widely distributed, also in New Ireland and New Britain.

MOLUCCAS. Buru, van Balgooy 4729, 4902; Mogeia 6086; Nooteboom 5355. — Ceram, Central part: Hatulu, Kornassi 1535. Southeastern part: Kornassi 1059. Eastern part: G. Selagor, Buwalda 5737.

NEW GUINEA. Western part: Vogelkop Peninsula, Tamrau Mts, Mt Kusemun, van Royen & Sleumer 7684. Arfak Mts, Angi Lakes area, Kostermans 2095, 2306, 2397, 2461, 2471. Ditschi, Mayr 42 (BO). Kebar valley area, Kalkman BW 6377; van Royen & Sleumer 7382; Versteegh BW

10391. Mt Nerimbau near Minjambau, Versteegh BW 12625. Fak-Fak, Mt Genova, Versteegh BW 10273. Wandammen Peninsula, Wondiwoi Mts, Koster BW 13640, 13685; Mayr 326 (BO), 346 (BO). Mamberamo R. Exploration biv., Docters van Leeuwen 10588. Nassau Mts West, Docters van Leeuwen 10889, 10892. Wissel Lakes, Eyma 4292. Idenburg R., Bernhard Camp, Brass 12731, 13005, 13006. Mt Wilhelmina (Trikora), Mangen 307. Bele R., Brass 11067, 11321, 11342, 11551. Baliem R. valley, Wamena, Kostermans & Soegeng 637; Sosrodihardjo 77 (BO). Eipomek valley, Hiepko & Schultze-Motel 1181, 1214, 1421. Star Mts, Mt Antares, Kalkman 4408, 4413. Ok Denim R. headwaters, NGF 33209. Okwalimkam R. headwaters, NGF 33163, 33188, 33310. Mt Cyclops, van Royen & Sleumer 6124. – Eastern part: West. Dist., Kiunga, Hyndman 7; NGF 42730, 42765, 45783. Mt Bosavi, Jacobs 8944, 9383. – W. Sepik Dist., Telefomin area, LAE 59259, 67529; NGF 41659, 48705, 48732, 73991; Veldkamp 6667, 6834. Hindenburg Ra., Kalkman 5289; NGF 32126, 32148, 32160. – E. Sepik Dist., Torricelli Mts, Darbyshire 426. Prince Alexander Ra., Pullen 1453. – W. Highl. Dist., Wabag, Merimanta, NGF 11068. Porget logging area, NGF 11331. Lufamunda, ANU 2027. Laiagam, Yobobos area, Hoogland & Schodde 7679. Kandep road, ANU 2843. Enga, Yakonda For., UPNG 5476. Jimmi valley, NGF 7662; Streimann & Yalo 8457. Nondugl, NGF 4330. Upper Wahgi valley, UPNG 1530. Wankl, Hoogland & Pullen 5874. Kopiago-Tari road, NGF 37251. Sirunki, ANU 818. Nebilyar logging area, Streimann 8421. Upper Nona R., Saunders 755. – E. Highl. Dist., Kainantu area, ANU 5942; NGF 29317; Sayers 170; Stauffer & Sayers 5591. Wahgi-Jimmi div., NGF 18257. Okapa, Hartley 13103, 13148; Philipson & Philipson 3271. Arau, Brass 32028. Daulo camp, Asari-Mairi div., Hoogland & Pullen 5462. Kortumi saw mill, NGF 6758. Mt Kerigomna, NGF 37388. Akuna, Hartley 12030. Lufa, Habu R., NGF 45262. Dunantina, Pullen 652. Aiyura, NGF 1034 A. Marafunga, Grubb & Edwards 263; Hartley 13258; NGF 40687. Mt Otto, NGF 48029. Mt Michael, Brass 31323, 31472, 31587; LAE 75434; NGF 11726. Mt Wilhelm area, van Balgooy 970; Brass 30279; LAE 53100; NGF 19928, 23117, 23716, 23724, 23729; Saunders 774, 780, 807. – S. Highl. Dist., Ialibu, NGF 37019, 37087. Munie, Streimann 8557. Onim, LAE 57166. Mt Giluwe, LAE 63112, 65289; Schodde 2054, 2093. Mt Né, NGF 28461, 32023. Anga valley, Schodde 1480. Kukubaru R., UPNG 1602. Erave-Kagua road, Streimann 8544. Mt Ambua, Kalkman 5187; NGF 26987. Tari area, NGF 28328; UPNG 1630, 1758. Mendi R. area, LAE 56184, 60620; NGF Schodde 1374. – Madang Dist., Finisterre Mts, NGF 19829, 21315. – Morobe Dist., Wau, NGF 21698. Edie creek, Hartley 11738, 12600; NGF 12160, 12161, 19956, 19961, 26202, 26203. Bulldog road, Fallen 566; NGF 24675, 30255. Mt Kaindi, Conn & Campbell 340; Conn & Kairo 135; McAdam 248; NGF 13910, 23631, 32855. Partep creek, NGF 3034. Upper Baiune, NGF 39123. Bulolo, NGF 26346. Dengalu, NGF 14466. Aseki area, Craven & Schodde 1150; NGF 42496; Schodde 4856; Streimann 8523; Vinas 12. Lae, Muniau, NGF 47216. Garagos, NGF 48692; LAE 62216. Cromwell Mts, Hoogland 9455, 9661, 9675. Sarawaket Ra. area, Clemens 1246, 6439, 7084, 8306 A (A). Boana, Clemens 8395a, 8625. Samanzing, Clemens 9095. Yunzang, Clemens 3771 (A). Sambanga, Clemens 7114 (A). Finschhafen, Arigenang, NGF 48133. Gurakor, Hartley 9698; NGF 14427. Mt Kawea, Buso, NGF 24429. Wakaia, NGF 26416. Lake Trist, NGF 29071, 29075. Mt Kurunkurungnu, LAE 59844. Waria R. gorge, LAE 53493. – Central Dist., Mt Yule area, Kunimaipa valley, H.A. Brown 164 (A). Port Moresby, Wariarata plateau, UPNG 591. Woitape, NGF 12914 (BO), 20359, 33793. Boridi, Carr 13423, 14728, 14743, 14927. Lala R., Carr 13971. Mt Victoria area, van Royen 10989. Mt Tafa, Brass 4119 (A), 4861 (A). Kakoda road, Hartley 10767. Lake Myola, NGF 34965. – Milne Bay Dist., Mt Suckling area, LAE 54333, 56147; NGF 28914. Maneau Ra., Mt Dayman, Brass 22424. Mt Simpson area, Schodde 5435. Fergusson I., LAE 71002. Goodenough I., Brass 24685; LAE 67943.

NEW BRITAIN. NGF 14953, 21963, 24183, 24191; LAE 58236, 58353, 58391, 63264.

NEW IRELAND. UPNG 4174.

Ecology. In lower to upper montane mixed rain forest, also in secondary or disturbed forest, or in moss forest, often along river, (90–)670–1830 (rarely –2745, occasionally –3200) m.

EXCLUDED SPECIES

Rapanea torricellensis K.Schum. in K.Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee, Nachtr. (1905) 346 = *Planchonella torricellensis* (K.Schum.) H.J. Lam, Nova Guinea 14 (1932) 562.